

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Callie Shoshio Examiner # 000000 Date: 5/3/05  
 Art Unit: 1714 Phone Number 302-571-1123 Serial Number: 101782,227  
 Mail Box and Bldg/Room Location: Rensen 10D15 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched.

Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Color Pigment Inks for General Use

Inventors (please provide full names): Charles Edward Akers, Jr., Susan Harden Butler  
Elaine Youp Money, Brian James Vinness, Jing X. Sun

Earliest Priority Filing Date: 2/19/04

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please find polymer of claim 1 - obtained from

- acrylic acid or lower alkyl substituted acrylic acid
- Poly(propylene glycol)-4-nonyl phenyl ~~acrylate~~ ether

and

SCIENTIFIC REFERENCE poly(ethylene glycol) d,l,6-tris-(1-phenylethyl)  
 Sci & Tech Inf. Cntr. phenyl ether methacrylate

MAY 5 RECD

Pat. & T.M. Office

Thank You

## STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>EL</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>5-6-05</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____

1. A thermal inkjet ink comprising, by weight with respect to the total weight of said ink:

at least about 4 percent color pigment having aromatic rings,

a dispersant having moieties consisting essentially of acrylic acid or

5 lower alkyl substituted acrylic acid (MAA), poly(propylene glycol)-4-nonylphenyl ether acrylate (NPHPPG), and poly (ethylene glycol) 2,4,6-tris-(1-phenylethyl) phenyl ether methacrylate, (TRISA),

a pigment to dispersant ratio by weight of about 2.5 to 9.5 parts pigment to 1 part dispersant,

10 a humectant and

a surfactant.

2. The ink of claim 1 in which the molar ratio of said TRISA in said dispersant is about 1 part to 16 parts of said MAA and NPHPPG combined.

3. The ink of claim 1 in which said surfactant is ethoxylated 2,4,7,9-tetramethyl 5 decyn- 4,7-diol.

4. The ink of claim 2 in which said surfactant is ethoxylated 2,4,7,9-tetramethyl 5 decyn- 4,7-diol.

5. A thermal inkjet ink comprising, by weight with respect to the total weight of said ink:

at least about 4 percent color pigment having aromatic rings,

a dispersant having moieties consisting essentially of acrylic acid or

5 lower alkyl substituted acrylic acid (MAA), poly(propylene glycol)-4-nonylphenyl ether acrylate (NPHPPG), and poly (ethylene glycol) 2, 4, 6-tris-(1-phenylethyl) phenyl ether methacrylate (TRISA),

=> file reg

FILE 'REGISTRY' ENTERED AT 12:58:54 ON 06 MAY 2005  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2005 American Chemical Society (ACS)

=> d his

FILE 'HCAPLUS' ENTERED AT 11:03:26 ON 06 MAY 2005

L1 819 S AKERS ?/AU  
L2 13830 S BUTLER ?/AU  
L3 335 S MONEY ?/AU  
L4 6 S NINNESS ?/AU  
L5 7 S SACOTO ?/AU  
L6 73919 S SUN ?/AU  
L7 0 S L1 AND L2 AND L3 AND L4 AND L5 AND L6  
L8 0 S L1 AND L2 AND L3 AND L6  
L9 0 S L4 AND L5  
L10 0 S L1 AND L2 AND L3  
L11 1 S L1 AND L2  
L12 0 S L1 AND L3  
L13 0 S L1 AND L4  
L14 0 S L1 AND L5  
L15 4 S L1 AND L6  
L16 1 S L2 AND L3  
L17 0 S L2 AND L4  
L18 0 S L2 AND L5  
L19 47 S L2 AND L6  
L20 0 S L3 AND L4  
L21 0 S L3 AND L5  
L22 0 S L3 AND L6  
L23 0 S L4 AND L5  
L24 0 S L4 AND L6  
L25 2 S L5 AND L6  
L26 7 S L11-L18 OR L20-L25  
SEL L26 1-6 RN  
L27 0 S NPHPPG  
L28 2 S TRISA

FILE 'REGISTRY' ENTERED AT 11:10:18 ON 06 MAY 2005

L29 64 S E1-E64  
L30 27 S L29 AND PMS/CI  
L31 22 S L30 AND RSD/FA  
SEL L31 1,2,6,11,13,18 RN  
L32 6 S E65-E70

FILE 'HCA' ENTERED AT 12:03:27 ON 06 MAY 2005

L33 3 S L32

FILE 'LREGISTRY' ENTERED AT 12:03:47 ON 06 MAY 2005

L34 STR  
L35 STR  
L36 STR  
L37 STR  
L38 STR

FILE 'REGISTRY' ENTERED AT 12:42:51 ON 06 MAY 2005

L39 134474 S C2H4O OR C3H6O  
L40 0 S L34 AND (L35 OR L36) AND L37 SSS SAM SUB=L39  
L41 STR L34  
L42 0 S L41 AND (L35 OR L36) AND L37 SSS SAM SUB=L39  
L43 STR L35  
L44 STR L36  
L45 0 S L41 AND (L43 OR L44) AND L37 SSS SAM SUB=L39  
L46 8 S L41 AND (L43 OR L44) AND L37 SSS FUL SUB=L39  
SAV L46 SHO227/A

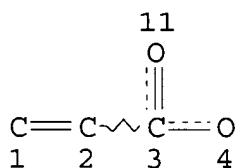
FILE 'HCA' ENTERED AT 12:53:50 ON 06 MAY 2005

L47 4 S L46  
L48 144 S L31  
L49 74067 S INK?  
L50 19354 S (JET OR JETS OR JETTED OR JETTING#) (2A) PRINT?  
L51 19 S L48 AND (L49 OR L50)  
L52 4 S L33 OR L47  
L53 16 S L51 NOT L52

FILE 'REGISTRY' ENTERED AT 12:58:54 ON 06 MAY 2005

=> d l46 que stat

L37 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

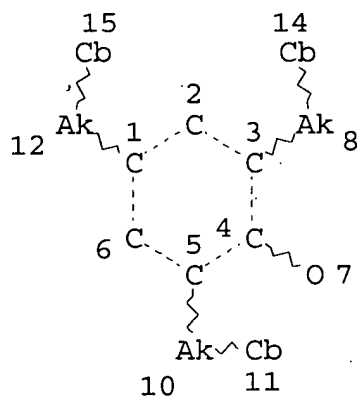
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L39 134474 SEA FILE=REGISTRY C2H4O OR C3H6O

L41 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 11

GGCAT IS UNS AT 14

GGCAT IS UNS AT 15

DEFAULT ECLEVEL IS LIMITED

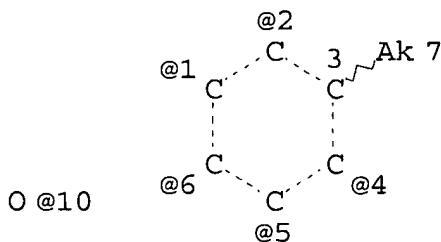
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

L43 STR



VPA 10-4/5/6/1/2 U

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 7

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M6 C AT 7

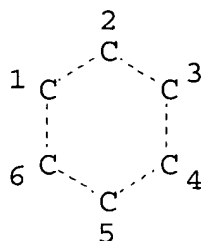
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

L44 STR



Id~Ak  
10 11

O~Id  
14 13

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M6 C AT 11

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE

L46 8 SEA FILE=REGISTRY SUB=L39 SSS FUL L41 AND (L43 OR L44)  
AND L37

100.0% PROCESSED 10333 ITERATIONS

8 ANSWERS

SEARCH TIME: 00.00.01

=> file hca

FILE 'HCA' ENTERED AT 12:59:04 ON 06 MAY 2005

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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=> d 152 1-4 ibib abs hitstr hitind

L52 ANSWER 1 OF 4 HCA COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 141:131236 HCA

TITLE: Chemically prepared electrophotographic toner  
and process

INVENTOR(S): Sun, Jing X.; Beach, Bradley Leonard

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 12 pp., Cont.-in-part of  
U.S. 6,652,634.

DOCUMENT TYPE: CODEN: USXXCO  
LANGUAGE: Patent  
FAMILY ACC. NUM. COUNT: English 2  
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004137348	A1	20040715	US 2003-703174	20031106
US 6652634	B1	20031125	US 2001-921486	20010803
PRIORITY APPLN. INFO.:			US 2001-921486	A2 20010803

AB Disclosed is a chem. prepd. toner for electrophotog. printers and method using a unique polymeric dispersant. The chem. prepd. toner includes agglomerated polymeric dispersant stabilized pigment particles, a fuser release agent, a charge control agent dispersion, and a self-stabilized essentially surfactant free latex binder. The polymeric dispersant includes at least three segments, a hydrophilic polymeric segment, a hydrophobic polymeric segment, and a protective colloid or reactive surfactant segment. The wt. av. mol. wt. range of the dispersant ranges from 5,000 to 30,000, and a hydrophobicity ranging from 10 to 90 percent by wt. The chem. prepd. toner includes agglomerated toner particles have a unimodal particles size distribution with a no. av. particle size (N) ranging from 5.0 to 8.5 .mu. and a vol. av. particle size (V) ranging from 5.0 to 8.5 .mu.. An advantage of the invention is that it enables prodn. of chem. prepd. toner particles having a relatively narrow particles size distribution. Another advantage of the invention is that the toner particles recovered from the process are substantially free of surfactant.

IT 722493-64-3P

(chem. prepd. electrophotog. toner and process)

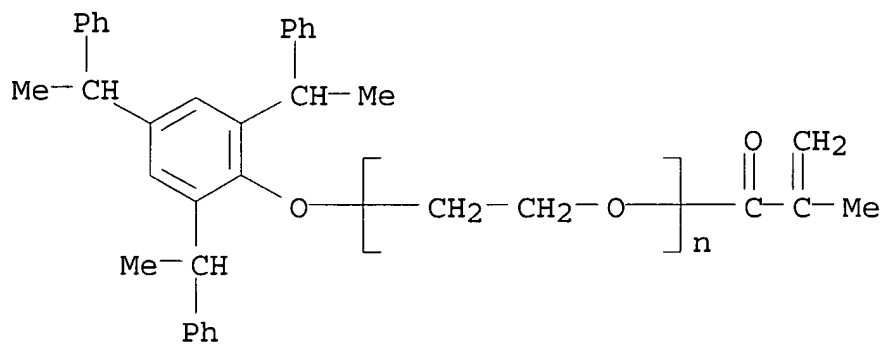
RN 722493-64-3 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[2,4,6-tris(1-phenylethyl)phenoxy]poly(oxy-1,2-ethanediyl) and .alpha.-(1-oxo-2-propenyl)-.omega.-(nonylphenoxy)poly[oxy(methyl-1,2-ethanediyl)] (9CI) (CA INDEX NAME)

CM 1

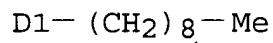
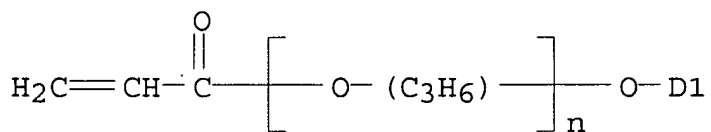
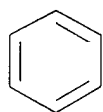
CRN 174200-85-2

CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C<sub>34</sub> H<sub>34</sub> O<sub>2</sub>  
 CCI PMS



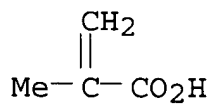
CM 2

CRN 71926-19-7  
 CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>18</sub> H<sub>26</sub> O<sub>2</sub>  
 CCI IDS, PMS



CM 3

CRN 79-41-4  
 CMF C<sub>4</sub> H<sub>6</sub> O<sub>2</sub>





IC ICM G03G009-097  
ICS G03G009-087  
INCL 430108300; 430108400; 430108500; 430108800; 430109300; 430110100;  
430110400; 430111400; 430137140  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 38  
IT 722493-64-3P  
(chem. prepd. electrophotog. toner and process)

L52 ANSWER 2 OF 4 HCA COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 141:90612 HCA  
TITLE: Pigmented inks and methods to improve ink  
performance  
INVENTOR(S): Sun, Jing; Sacoto, Paul J.; Sun, Naiyu  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S. Pat. Appl. Publ., 12 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004127619	A1	20040701	US 2002-330041	200212 26
PRIORITY APPLN. INFO.: US 2002-330041				200212 26

AB The present invention relates to a pigment dispersion and a method of producing a pigment dispersion by grinding a grind mixt. comprising a pigment, a humectant, water, and a polymeric dispersant. The invention also relates to an ink compn. comprising an aq. carrier and a pigment dispersion produced by grinding as above. The invention also relates to an ink compn. comprising a pigment, a polymeric dispersant, a humectant, a basic dye, an aq. carrier, wherein the pH of the ink compn. is less than or equal to 7.

IT 713516-20-2P, Methacrylic acid-nonylphenylpolypropylene glycol acrylate-SIPOMER SEM 25 graft copolymer 714200-86-9P, Ethylene oxide-propylene oxide-methacrylic acid graft copolymer nonylphenyl 2,4,6-tris(1-phenylethyl)phenyl ether  
(dispersant; pigmented inks and dispersants for improving ink performance)

RN 713516-20-2 HCA

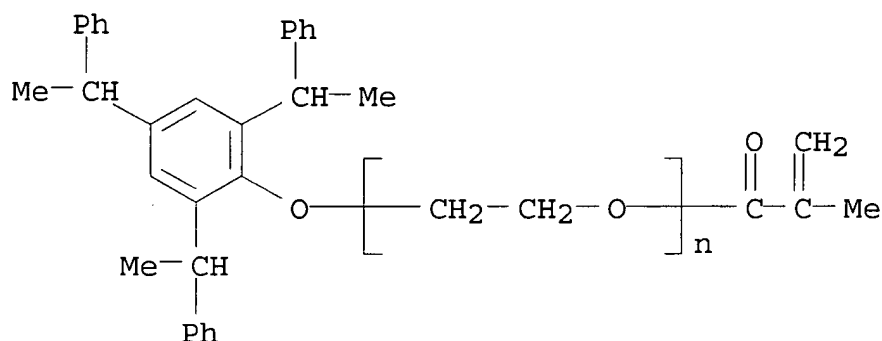
CN 2-Propenoic acid, 2-methyl-, polymer with .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[2,4,6-tris(1-phenylethyl)phenoxy]poly(oxy-1,2-ethanediyl) and .alpha.-(1-oxo-2-propenyl)-.omega.-(nonylphenoxy)poly[oxy(methyl-1,2-ethanediyl)], graft (9CI) (CA INDEX NAME)

CM 1

CRN 174200-85-2

CMF (C2 H4 O)<sub>n</sub> C34 H34 O2

CCI PMS

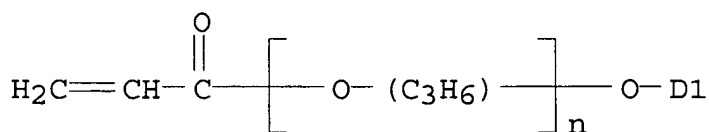
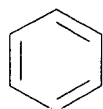


CM 2

CRN 71926-19-7

CMF (C3 H6 O)<sub>n</sub> C18 H26 O2

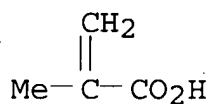
CCI IDS, PMS



D1-(CH<sub>2</sub>)<sub>8</sub>-Me

CM 3

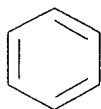
CRN 79-41-4  
CMF C4 H6 O2



RN 714200-86-9 HCA  
CN 2-Propenoic acid, 2-methyl-, polymer with methyloxirane and oxirane,  
nonylphenyl 2,4,6-tris(1-phenylethyl)phenyl ether, graft (9CI) (CA  
INDEX NAME)

CM 1

CRN 25154-52-3  
CMF C15 H24 O  
CCI IDS

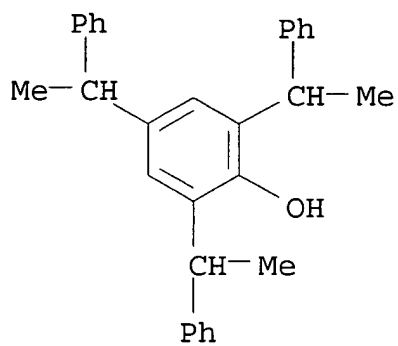


D1-OH

D1-(CH<sub>2</sub>)<sub>8</sub>-Me

CM 2

CRN 18254-13-2  
CMF C30 H30 O



CM 3

CRN 187041-16-3

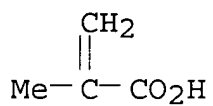
CMF (C4 H6 O2 . C3 H6 O . C2 H4 O) x

CCI PMS

CM 4

CRN 79-41-4

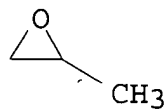
CMF C4 H6 O2



CM 5

CRN 75-56-9

CMF C3 H6 O



CM 6

CRN 75-21-8

CMF C2 H4 O



IC ICM C08J003-00  
 INCL 524385000; 524487000  
 CC 42-12 (Coatings, Inks, and Related Products)  
 IT **713516-20-2P**, Methacrylic acid-nonylphenylpolypropylene  
 glycol acrylate-SIPOMER SEM 25 graft copolymer **714200-86-9P**  
 , Ethylene oxide-propylene oxide-methacrylic acid graft copolymer  
 nonylphenyl 2,4,6-tris(1-phenylethyl)phenyl ether  
 (dispersant; pigmented inks and dispersants for improving ink  
 performance)

L52 ANSWER 3 OF 4 HCA COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 141:8720 HCA  
 TITLE: Polymeric dispersants to improve smear in  
 printing  
 INVENTOR(S): Sacoto, Paul; Sun, Jing X.; Sun, Naiyu  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 13 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004102541	A1	20040527	US 2002-304592	200211 26
PRIORITY APPLN. INFO.: US 2002-304592				200211 26

AB This invention relates to polymeric dispersants useful in ink jet ink compns. The graft polymers comprise monomers having electron rich functional groups, which exhibit favorable interactions with the surface of pigment particles thereby better stabilizing the pigment dispersion within the aq. ink compn. The graft polymers also comprise hydrophobic monomers having the ability to form hydrogen bonding. The polymers of the present invention provide a dispersant that increases the smear resistance of pigmented inks, esp. when used on photo or gelatin paper. The graft polymers also provide excellent chroma for printing. The present invention also relates to aq. ink compns. which include those polymeric

dispersants. Thus, methacrylic acid 24.0, 2-hydroxyethyl methacrylate 20.0, and polypropylene glycol 4-nonylphenyl ether acrylate 45.0 g were polymd. to give a graft copolymer dispersant with Mw 8211 and Mn 4523, 20% KOH was added therein and mixed with a pigment (dispersant: pigment = 1:1), maintained pH at 7.5 using 20% KOH, and dild. to give a 12-15%-solids premix, the resulting premix was mixed with pigment 3, 2-pyrrolidone 5, polyethylene glycol 5, thiodiethanol 5, and 1,2-hexanediol 1%, and water to give an ink compn. showing good smear resistance and water fastness property.

IT 693813-93-3P 694439-29-7P, Ethylene oxide-2-hydroxyethyl methacrylate-methacrylic acid-propylene oxide graft copolymer 4-nonylphenyl 2,4,6-tris(1-phenylethyl)phenyl ether potassium salt

(prepn. of polymeric dispersants to improve smear in printing)

RN 693813-93-3 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with 2-hydroxyethyl 2-methyl-2-propenoate, .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[2,4,6-tris(1-phenylethyl)phenoxy]poly(oxy-1,2-ethanediyl) and .alpha.-(1-oxo-2-propenyl)-.omega.-(4-nonylphenoxy)poly[oxy(methyl-1,2-ethanediyl)], graft, potassium salt (9CI) (CA INDEX NAME)

CM 1

CRN 693813-92-2

CMF (C6 H10 O3 . C4 H6 O2 . (C3 H6 O)n C18 H26 O2 . (C2 H4 O)n C34 H34 O2)x

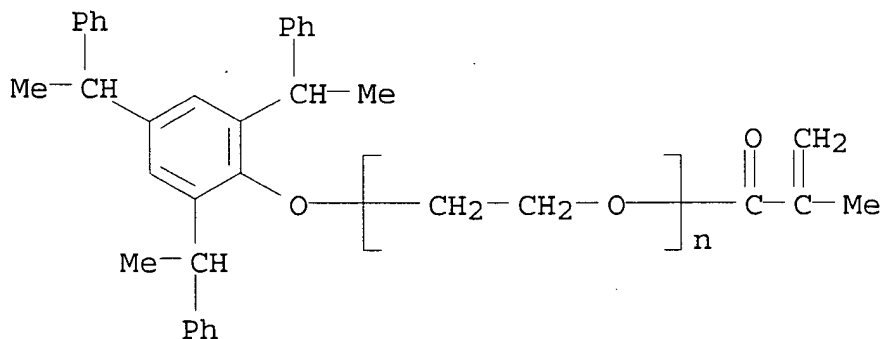
CCI PMS

CM 2

CRN 174200-85-2

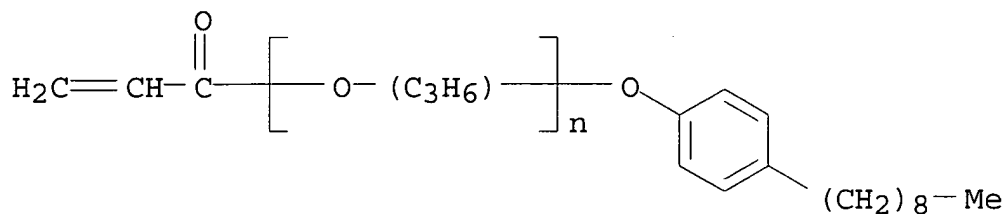
CMF (C2 H4 O)n C34 H34 O2

CCI PMS



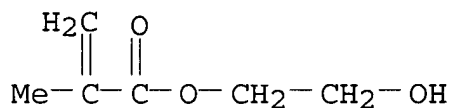
CM 3

CRN 72246-47-0  
 CMF (C3 H6 O)<sub>n</sub> C18 H26 O2  
 CCI IDS, PMS



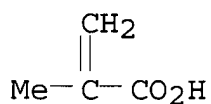
CM 4

CRN 868-77-9  
 CMF C6 H10 O3



CM 5

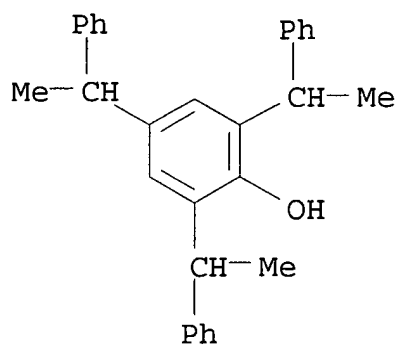
CRN 79-41-4  
 CMF C4 H6 O2



RN 694439-29-7 HCA  
 CN 2-Propenoic acid, 2-methyl-, polymer with 2-hydroxyethyl  
 2-methyl-2-propenoate, methyloxirane and oxirane, 4-nonylphenyl  
 2,4,6-tris(1-phenylethyl)phenyl ether, graft, potassium salt (9CI)  
 (CA INDEX NAME)

CM 1

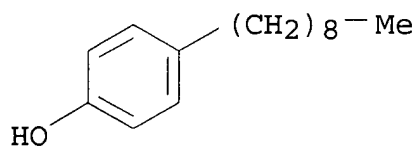
CRN 18254-13-2  
 CMF C30 H30 O



CM 2

CRN 104-40-5

CMF C15 H24 O



CM 3

CRN 694439-28-6

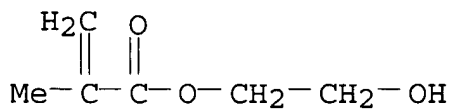
CMF (C6 H10 O3 . C4 H6 O2 . C3 H6 O . C2 H4 O)x

CCI PMS

CM 4

CRN 868-77-9

CMF C6 H10 O3

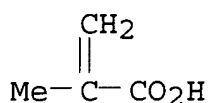


CM 5

CRN 79-41-4

CMF C4 H6 O2

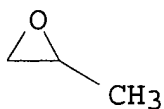




CM 6

CRN 75-56-9

CMF C3 H6 O



CM 7

CRN 75-21-8

CMF C2 H4 O



IC ICM C03C017-00  
ICS C09D005-00; C08F220-06  
INCL 523160000; 523161000; 526317100  
CC 42-12 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 46  
IT 693813-90-0P **693813-93-3P** 693813-96-6P 693813-99-9P  
693814-02-7P 694439-27-5P, 2-Hydroxyethyl methacrylate-methacrylic acid-propylene oxide graft copolymer 4-nonylphenyl ether potassium salt **694439-29-7P**, Ethylene oxide-2-hydroxyethyl methacrylate-methacrylic acid-propylene oxide graft copolymer 4-nonylphenyl 2,4,6-tris(1-phenylethyl)phenyl ether potassium salt 694439-31-1P, Ethylene oxide-2-hydroxyethyl methacrylate-methacrylic acid graft copolymer 2,4,6-tris(1-phenylethyl)phenyl ether potassium salt 694439-33-3P, Ethylene oxide-2-(2'-hydroxy-5'-methacryloxyethylphenyl)-2H-benzotriazole-methacrylic acid graft copolymer 2,4,6-tris(1-phenylethyl)phenyl ether potassium salt 694439-35-5P, Ethylene oxide-2-hydroxyethyl methacrylate-2-(2'-hydroxy-5'-methacryloxyethylphenyl)-2H-benzotriazole-methacrylic acid graft copolymer 2,4,6-tris(1-phenylethyl)phenyl ether potassium salt  
(prepn. of polymeric dispersants to improve smear in printing)

L52 ANSWER 4 OF 4 HCA COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 140:6292 HCA  
TITLE: Encapsulated pigments for ink-jet ink  
compositions and their manufacture  
INVENTOR(S): Akers, Charles Edward; Sun, Jing X.  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S. Pat. Appl. Publ., 9 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003225185	A1	20031204	US 2002-161910	200206 04
PRIORITY APPLN. INFO.: US 2002-161910				200206 04

AB Pigment particles are at least partially encapsulated with .gtoreq.1 polymers which are partially sol. in org. solvents, but insol. in water and have .gtoreq.1 polar segment and .gtoreq.1 nonpolar segment, such as 2-hydroxyethyl methacrylate-Bu acrylate-Me methacrylate copolymer. The encapsulated pigment particles are manufd. by adding pigment particles to a soln. of polymer and org. solvent, mixing to form a paste; then collecting after driving off the solvent. The encapsulated pigment is used to prep. an ink-jet ink compn. by grinding the pigment in a water carrier with a conventional polymer dispersant.

IT 628313-11-1P 628315-63-9P, Ethylene  
oxide-methacrylic acid-propylene oxide graft copolymer,  
4-nonylphenyl and 2,4,6-tris(1-phenylethyl)phenyl ether  
(dispersant; manuf. of encapsulated pigments for ink-jet ink  
comps.)

RN 628313-11-1 HCA

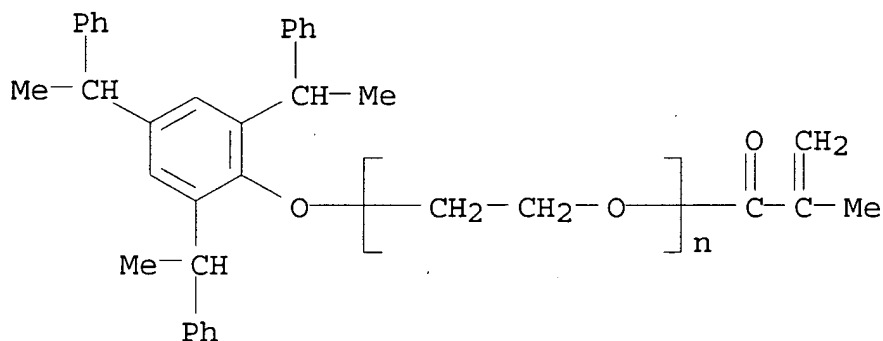
CN 2-Propenoic acid, 2-methyl-, polymer with .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[2,4,6-tris(1-phenylethyl)phenoxy]poly(oxy-1,2-ethanediyl) and .alpha.-(1-oxo-2-propenyl)-.omega.-(4-nonylphenoxy)poly[oxy(methyl-1,2-ethanediyl)], graft (9CI) (CA  
INDEX NAME)

CM 1

CRN 174200-85-2

CMF (C2 H4 O)n C34 H34 O2

CCI PMS

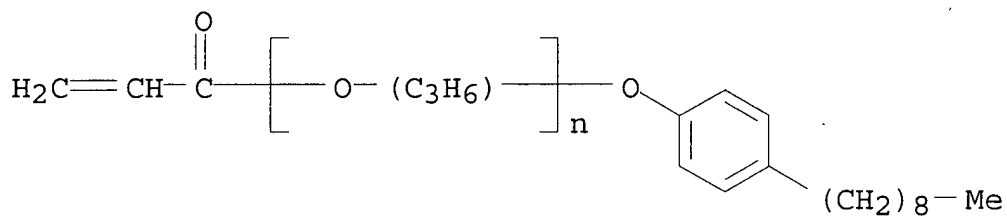


CM 2

CRN 72246-47-0

CMF (C3 H6 O)<sub>n</sub> C18 H26 O2

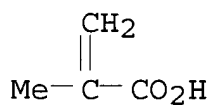
CCI IDS, PMS



CM 3

CRN 79-41-4

CMF C4 H6 O2



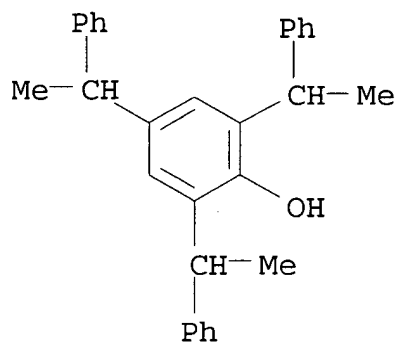
RN 628315-63-9 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with methyloxirane and oxirane,  
4-nonylphenyl 2,4,6-tris(1-phenylethyl)phenyl ether, graft (9CI)  
(CA INDEX NAME)

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CRN 18254-13-2

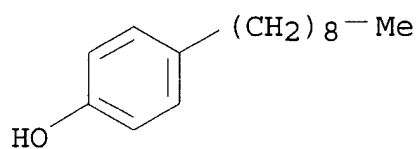
CMF C30 H30 O



CM 2

CRN 104-40-5

CMF C15 H24 O



CM 3

CRN 187041-16-3

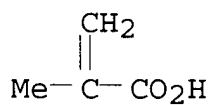
CMF (C4 H6 O2 . C3 H6 O . C2 H4 O) x

CCI PMS

CM 4

CRN 79-41-4

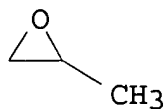
CMF C4 H6 O2



CM 5

CRN 75-56-9

CMF C3 H6 O



CM 6

CRN 75-21-8

CMF C2 H4 O



IC ICM C03C017-00

ICS C09D005-00

INCL 523160000; 523161000

CC 42-12 (Coatings, Inks, and Related Products)

IT **628313-11-1P** 628315-57-1P, Dimethylsilanediol-ethylene oxide-methacrylic acid graft copolymer, 2,4,6-tris(1-phenylethyl)phenyl ether 628315-60-6P, Dimethylsilanediol-methacrylic acid-propylene oxide graft copolymer, 4-nonylphenyl ether **628315-63-9P**, Ethylene oxide-methacrylic acid-propylene oxide graft copolymer, 4-nonylphenyl and 2,4,6-tris(1-phenylethyl)phenyl ether (dispersant; manuf. of encapsulated pigments for ink-jet ink compns.)

=&gt; d 153 6 cbib abs hitstr hitind

L53 ANSWER 6 OF 16 HCA COPYRIGHT 2005 ACS on STN

138:172290 Polymeric dispersants used for aqueous pigmented **inks** for **ink-jet printing**. Akers, Charles

Edward, Jr.; Franey, Terence Edward; Sun, Jing X.; Butler, Carla Marary (Lexmark International, Inc., USA). PCT Int. Appl. WO

2003014237 A1 20030220, 40 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2.

APPLICATION: WO 2002-US24030 20020730. PRIORITY: US 2001-921486

20010803.

AB The present invention relates to graft copolymers, useful as dispersants in **ink jet ink** compns., which comprise two structurally distinct segments: a hydrophilic segment and a hydrophobic segment. The preferred hydrophilic segment is comprised preferably of a methacrylic acid polymer, or a copolymer thereof with another monomer, such as styrene sulfonic acid. The preferred hydrophobic segment comprises a polymer or copolymer contg. electron rich functional groups comprised of a plurality of methacrylate derivatized monomers, preferably a methacrylate ester monomer, or a substituted methacrylate ester monomer (a methacrylate ester where the alkyl group is replaced with a siloxyl substituent, and oligomeric siloxane). The present invention also relates to aq. **ink** compns. which include the polymeric dispersants of the present invention. A further embodiment of the present invention comprises a polymer comprising a monomeric hydrophobic head and a polymeric tail. In a preferred embodiment, the monomeric hydrophobic head is (ethylene glycol) 2,4,6-tris-(1-phenylethyl)phenyl ether.

IT **193097-06-2DP**, Dimethylsilanediol-ethylene oxide-methacrylic acid graft copolymer, trisphenylethylphenyl ether  
**496956-38-8P**, Methacrylic acid-monomethacryloxypropyl-terminated polydimethylsiloxane-Sipomer SEM 25 graft copolymer (dispersant; manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink-jet printing**)

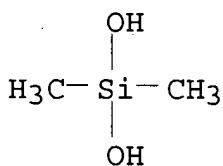
RN 193097-06-2 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with dimethylsilanediol and oxirane, graft (9CI) (CA INDEX NAME)

CM 1

CRN 1066-42-8

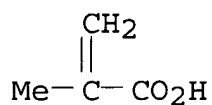
CMF C2 H8 O2 Si



CM 2

CRN 79-41-4

CMF C4 H6 O2



CM 3

CRN 75-21-8

CMF C2 H4 O



RN 496956-38-8 HCA

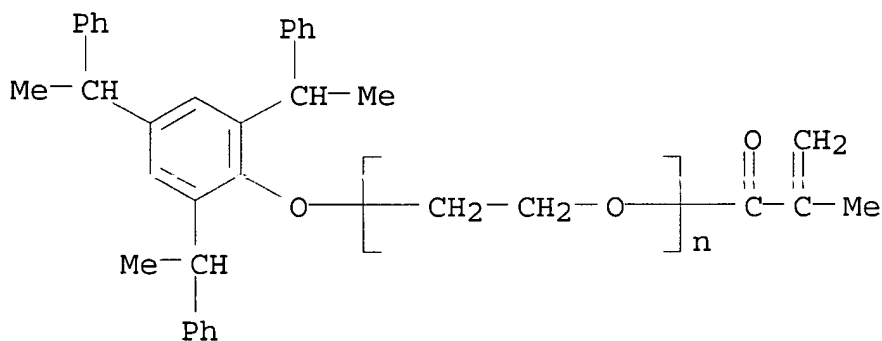
CN 2-Propenoic acid, 2-methyl-, polymer with .alpha.-[dimethyl[3-[(2-methyl-1-oxo-2-propenyl)oxy]propyl]silyl]-.omega.-hydroxypoly[oxy(dimethylsilylene)] and .alpha.-(2-methyl-1-oxo-2-propenyl)-.omega.-[2,4,6-tris(1-phenylethyl)phenoxy]poly(oxy-1,2-ethanediyl), graft (9CI) (CA INDEX NAME)

CM 1

CRN 174200-85-2

CMF (C2 H4 O)<sub>n</sub> C34 H34 O2

CCI PMS

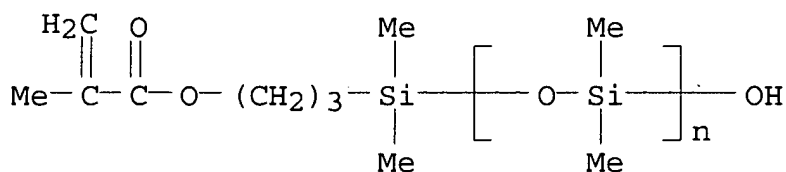


CM 2

CRN 123069-60-3

CMF (C2 H6 O Si)<sub>n</sub> C9 H18 O3 Si

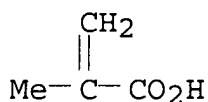
CCI PMS



CM 3

CRN 79-41-4

CMF C4 H6 O2



IC ICM C09D011-02

CC 46-4 (Surface Active Agents and Detergents)

Section cross-reference(s): 42

ST graft polymer amphoteric dispersant pigment **ink**  
**jet printing ink**

IT Polysiloxanes, uses

(acrylic-polyoxyalkylene-, graft, dispersant; manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink** -**jet printing**)

IT Polyoxyalkylenes, uses

(acrylic-polysiloxane-, graft, dispersant; manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink** -**jet printing**)

IT Dispersing agents

(amphoteric; manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink-jet printing**)IT **Inks**(jet-printing; manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink** -**jet printing**)

IT Pigments, nonbiological

(manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink-jet printing**)IT 193097-06-2DP, Dimethylsilanediol-ethylene oxide-methacrylic acid graft copolymer, trisphenylethylphenyl ether  
496956-38-8P, Methacrylic acid-monomethacryloxypropyl-terminated polydimethylsiloxane-Sipomer SEM 25 graft copolymer (dispersant; manuf. of polymeric dispersants used for aq. pigmented **inks** for **ink-jet**)



=> d his

FILE 'REGISTRY' ENTERED AT 14:30:27 ON 06 MAY 2005

                  E ACRYLIC ACID/CN  
L1                  1 S E3  
                  E METHACRYLIC ACID/CN  
L2                  1 S E3  
L3                  1 S 71926-19-7  
L4                  1 S 72246-47-0  
L5                  1 S 174200-85-2

FILE 'HCA' ENTERED AT 14:44:02 ON 06 MAY 2005

L6                  49327 S L1 OR L2  
L7                  41 S L3 OR L4  
L8                  7 S L5  
L9                  0 S L6 AND L7 AND L8

FILE 'REGISTRY' ENTERED AT 14:44:33 ON 06 MAY 2005

                  E ETHYLENE OXIDE/CN  
L10                 1 S E3  
                  E PROPYLENE OXIDE/CN  
L11                 1 S E3

FILE 'HCA' ENTERED AT 14:45:02 ON 06 MAY 2005

L12                 27718 S L10 OR L11

FILE 'REGISTRY' ENTERED AT 14:45:33 ON 06 MAY 2005

                  E POLYETHYLENE GLYCOL/CN  
L13                 1 S E3  
                  E POLYETHYLENE OXIDE/CN  
L14                 1 S E3  
                  E POLYPROPYLENE GLYCOL/CN  
L15                 1 S E3  
                  E POLYPROPYLENE OXIDE/CN  
                  E PROPYLENE OXIDE HOMOPOLYMER/CN  
L16                 1 S E3  
L17                 2 S L13 OR L14 OR L15 OR L16  
                  E OXIRANE/CN  
L18                 1 S E3  
L19                 25688 S 75-21-8/CRN  
L20                 0 S L19 AND 1/NC  
                  E METHYLOXIRANE/CN  
L21                 1 S E3  
L22                 19858 S 75-56-9/CRN  
L23                 5 S L22 AND 1/NC  
                  ACT EOEGPOPG/A  
                  -----

L24 (          9682)SEA FILE=REGISTRY 75-21-8/CRN

L25 ( 21863)SEA FILE=REGISTRY 107-21-1/CRN  
L26 ( 9283)SEA FILE=REGISTRY 75-56-9/CRN  
L27 ( 8413)SEA FILE=REGISTRY 57-55-6/CRN  
L28 ( 7690)SEA FILE=REGISTRY (L24 OR L25) AND (L26 OR L27)  
L29 11 SEA FILE=REGISTRY L28 AND 2/NC

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L30 18 S L17 OR L23 OR L29

FILE 'HCA' ENTERED AT 14:51:57 ON 06 MAY 2005

L31 103416 S L30

L32 2825 S L6 AND (L12 OR L31)

FILE 'REGISTRY' ENTERED AT 14:53:39 ON 06 MAY 2005

L33 1 S 18254-13-2

L34 1 S 25154-52-3

L35 1 S 104-40-5

FILE 'HCA' ENTERED AT 14:58:57 ON 06 MAY 2005

L36 36 S L33

L37 4384 S L34 OR L35

L38 19 S L32 AND L37

L39 0 S L32 AND L36